

CONFIRMATION OF RESTRICTION/ELECTION

Applicants hereby confirm their election of claims 1-10 for prosecution on the merits. This election is now made without traverse.

The limitations for the new claims 21-23 are taken directly from the table in the specification, where the viscosity range is between 7 and 42 in those specific examples.

SUMMARY OF THE OFFICE ACTION

1. An election under an Office imposed restriction requirement was confirmed and the requirement repeated.
2. Claims 1, 2 and 8-10 were rejected under 35 USC 102(b) or alternatively under 35 USC 103(a) as anticipated by or as unpatentable over Goldberg (US Patent No. 3,301,809).
3. Claims 1-10 were rejected under 35 USC 102(b) or alternatively under 35 USC 103(a) as anticipated by or as unpatentable over Sekmakas (US Patent No. 4,076,677).
4. Claims 1-10 were rejected under 35 USC 102(b) or alternatively under 35 USC 103(a) as anticipated by or as unpatentable over Kun Cao (Macromol. Symp. 150, 2000, pp. 195-200).

RESPONSE TO THE ISSUES IN THE OFFICE ACTION

1. An election under an Office imposed restriction requirement was confirmed and the requirement repeated.

Applicants confirm their election, now without traverse, in the subject matter of Group I, claims 1-10. The inventorship remains the same with respect to the original filing of the Application.

The discussions of the traversal of the rejections based on cited art will begin with the Kun Cao reference in paragraph 4, as that is believed to be a more logical starting point for the analysis.

4. Claims 1-10 were rejected under 35 USC 102(b) or alternatively under 35 USC 103(a) as anticipated by or as unpatentable over Kun Cao (Macromol. Symp. 150, 2000, pp. 195-200).

The (Kun Cao article) has been the starting point of the research and development which conducted to the present invention. This document is acknowledged in the background of the art section of the present application.

Kun Cao deals with the preparation of monodisperse copolymer particles in the range of 1-5 μm by unseeded batch dispersion copolymerization of methylmethacrylate (MMA) as major monomer in methanol-water medium using an azo-type initiator and PVP as steric dispersant. The effects of type and concentration of comonomers on the latex stability, particle size and monodispersity of the copolymer particles was the scope of the investigation. The investigated ethylenically unsaturated monomers containing hydrophilic functionality were acrylic acid (AA) and methacrylic acid (MAA) (page 196, lines 1-3).

On page 197, lines 3 – 6, Kun Cao clearly states “Figures 2 and 3 show that the particle size increases and the size distribution tend to be more monodisperse when a small amount of AA or MAA is added. On the contrary, the particle size will decrease and its distribution tends to be broader owing to second particle formation stage if ratio of AA or MAA to MMA is more than certain value, leading to unstabilization”.

It is worth noting Figs. 2 and 3 on page 198 which show the effect of the ratio of MMA to AA or MAA on particle size and particle size distribution. In both cases, it is

clearly evident that the author of the article tested a percentage of comonomer (AA or MAA) not higher than 10 % relative to the MMA and that, starting from a proportion of AA and MAA of about 5%, the particle size distribution had an abrupt increase. Accordingly, it is clear that the disclosure of Kun Cao showed the presence of the problem that the present invention is now solving. This was also clear in the comment on page 4, lines 21-26 of the present application where it was stated that "The addition of hydrophilic comonomer causes poor stability and decreases flexibility of polymerization conditions. Moreover, the partitioning of functional group chemically anchored on the surface of the copolymer particles is poorly controlled. This may be a fatal weakness for application of an unseeded batch dispersion process to obtain a copolymer including an effective amount of an ethylenically unsaturated monomer containing hydrophilic functional group".

3. Claims 1-10 were rejected under 35 USC 102(b) or alternatively under 35 USC 103(a) as anticipated by or as unpatentable over Sekmakas (US Patent No. 4,076,677).

The disclosure Semakas (US Patent 4,076,677) and Goldberg (US Patent No. 3,301,809) is nothing more than a confirmation that there was a general knowledge in the art about the difficulty of applying dispersion polymerization to copolymer containing an effective amount of ethylenically unsaturated comonomer containing hydrophilic functionality.

In fact, the examples of Semakas describe a content of acrylic acid lower than 10% relatively to the total amount of comonomers (see column 5, lines 34-37 and column 5, line 67 to column 6 line 2) and similarly do the Examples of Goldberg. Accordingly, the presently amended claim 8 which includes the features of claims 9 and 10 as well as the provision of providing an effective amount of an ethylenically unsaturated monomer containing hydrophilic functional group within the claimed copolymer is considered novel over the prior art mentioned by the Examiner.

There are addition arguments against Goldberg (US 3,301,809), besides those objections that are similar to those for the previous citations, that is the low amount of hydrophylic monomer. The cited Goldberg patent teaches and claims the possibility of preparing a co-polymer of Vinyl acetate and N-metylolacrylamide by emulsion

polymerization. This means starting from a monomer emulsion obtained through the use of a suitable emulsifier (in this case an appropriate hydrolysis degree PVA is used). This step is different from what that claimed. The present claims are related to dispersion polymerization, which is distinct from emulsion polymerization and has different physical and chemical environment requirements.

For example, in claims 1 and 5, the Goldberg patent refers to the viscosity of PVA used as emulsifier, and not to the viscosity of the reaction medium as specified in the claims of this case.

The amount of N-methylolacrylamide that can be introduced with the process described in Goldberg (e.g., claim 2) is, however, limited from 1 to 16%; opposite the amounts in the claimed process where up to 50% w/w can be introduced with respect to the hydrophylic monomer. The reference to viscosity of the emulsion at the beginning of the reaction in the Goldberg (the presently claimed process case is not preformed as an emulsion) is made only in claim 10, and are indicated as very high viscosity, between 500 and 10000 cps. In the experimentation described in the present application, viscosity up to 42 cps at most are reported.

It must be taken into further account that the synthetic method proposed in Goldberg shows many practical disadvantages and scarce reproducibility (emulsifying Vinyl acetate and the radical initiator in water, with the aid of a stabilizer, elevated temperatures, then add an aqueous solution of N-methylolacrylamide): to obtain reproducible bead dimensions, the distribution of the water soluble monomer in the two phases should be always the same, which is hardly obtainable with the process described in the Goldberg patent.

CONCLUSION

The rejections of record have been shown to be in error. If the Examiner, after review of this amendment and response believes that some discussion or further amending of the application can advance the prosecution of this application, the Examiner is courteously invited to call the attorney below at 952.832.9090, in the Central Time Zone, between 8 a.m. and 5 p.m.

Respectfully submitted,

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Date: 7 MARCH 2006

By: 

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CERTIFICATE UNDER 37 C.F.R. 1.8: The undersigned hereby certifies that this Transmittal Letter and the paper, as described herein, are being deposited in the United States Postal Service, as first class mail, with sufficient postage, in an envelope addressed to: Mail Stop: Amendment, Commissioner for Patents, PO Box 1450, Alexandria, VA 22313-1450 on 7 MARCH 2006

Mark A. Litman
Name


Signature